BASIC
business and schools in collaboration

the BEL Commission
Business Experiential Learning Commission

Colorado Workforce Development Council

Youth Apprenticeships in Colorado

AN EMPLOYER DRIVEN SYSTEM OF EDUCATION & TRAINING

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OVERVIEW

The Inspiration
- Swiss VET

Colorado's Vision
- BEL Commission & BASIC

Pilot Example
- DPS CareerConnect

Discussion & Questions

The Inspiration

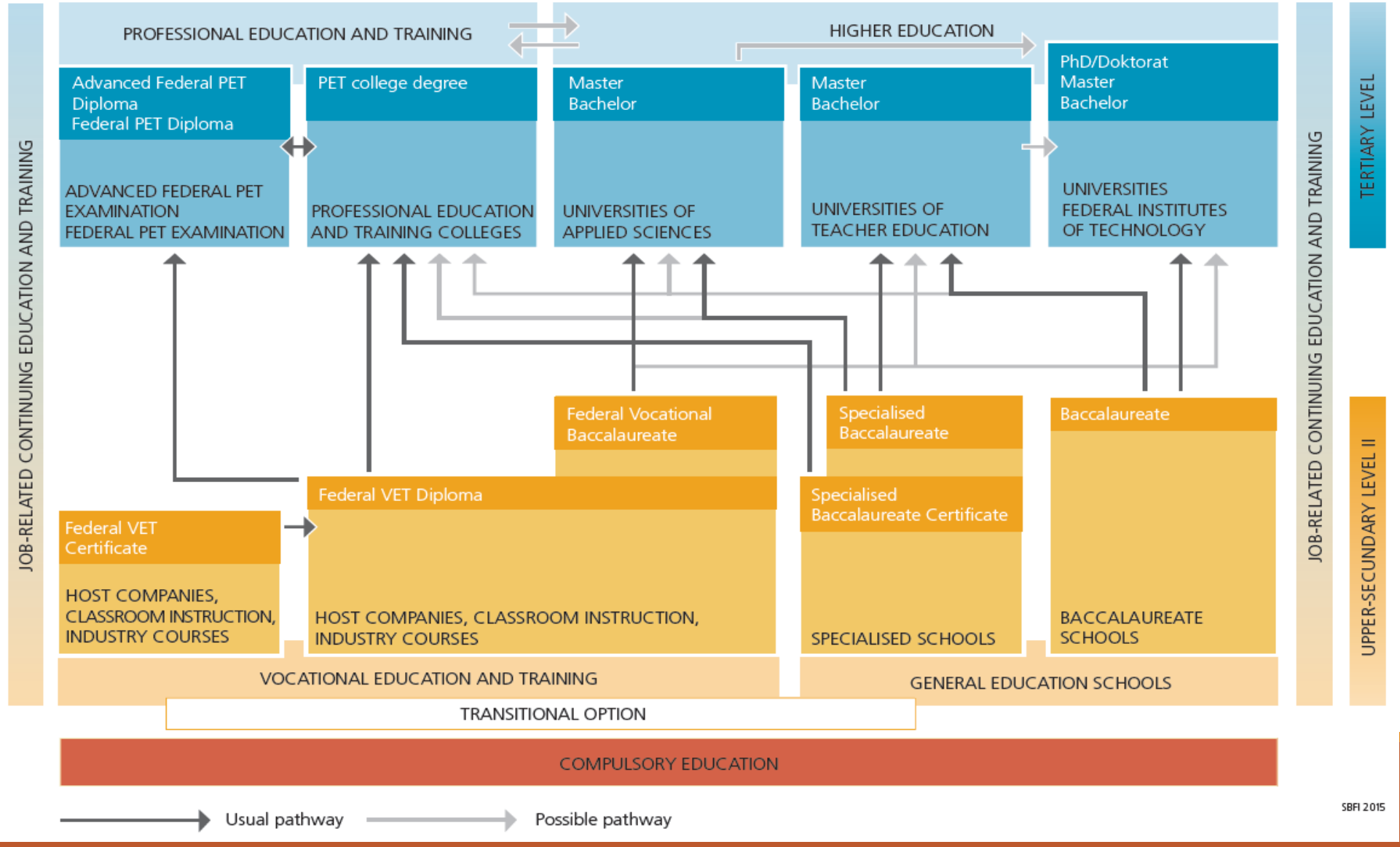
SWISS VOCATIONAL EDUCATION AND TRAINING

Swiss Profile

- 3.2% unemployment
- 8.2 million population
- 580,000 businesses
- 70% of all students choose apprenticeships, no stigma – most CEO's have been apprentices
- 40% of companies participate in the the program
- About 97% of all students have graduated with a VET Diploma (Vocational Education & Training) or other upper secondary degree.

Apprenticeship System

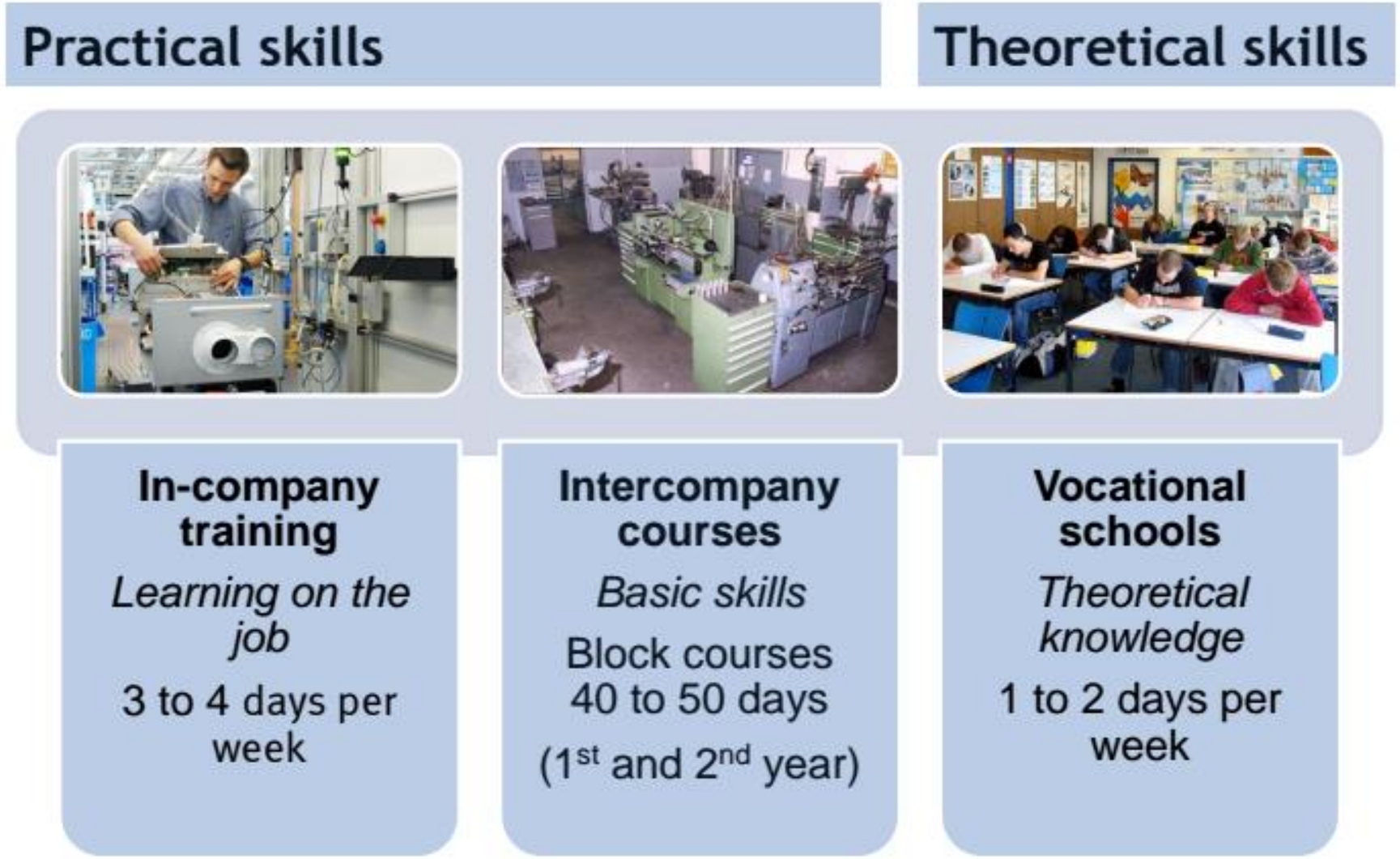
- Similar coursework Kindergarten thru 10th grade.
- Practical work experience education starts at 15 and typically lasts 2-4 years. Hybrid of HS and community college vocational training.
- 3-4 days/week hands on work experience , 1-2 days/week in classroom
- Company nor student are bound to each other after training.
- Permeable system that allows youth to choose a career pathway, change industries and move on to specialized certifications or higher education.



The permeable system allows for all paths to result in whatever degree of education is desired with little to no backtracking, duplicative education, or dead-ends.

The Swiss System- Theory & Practice

- Dual track education of theory (classroom) and practice (on-the-job)
- VET students earn wages while working for host companies
- Companies teach students practical skills related to nationally approved training guidelines
- Intercompany training centers provide the “early practice” for students to learn industry specific skills and knowledge



System elements

- Federal responsibilities: system oversight, apprenticeship accreditation and testing

- Cantons (states): Local governments similar to our School Districts that are responsible for running the classroom curriculum and providing career guidance to students.

- Private Companies: Over 230 approved occupations trained in apprenticeships at over 40% of all companies in Switzerland.

- Many models for private sector training but most industry clusters belong to an association that provides standardized training approved by both industry and government.
  - Industry Associations include banking & finance, healthcare, technology, transportation, manufacturing, hospitality, etc.

The Role of Associations

SwissMEM is Switzerland's Engineering and Manufacturing Association:

- Identify competencies
  - Re-evaluate every 5 years
- Develop training guides and assessments
  - Recognized by Confederation for VET Diploma and Baccalaureate Degrees
- Assist in development of apprenticeships
- Support trainers within companies
- Build and support intercompany training centers and other industry specific schools

Swissmem

is responsible for the following VET programs:


Mechatronic Engineer (4y)


Electronic Engineer (4y)


Technical Design Engineer (4y)


Polymechanical Engineer (4y)

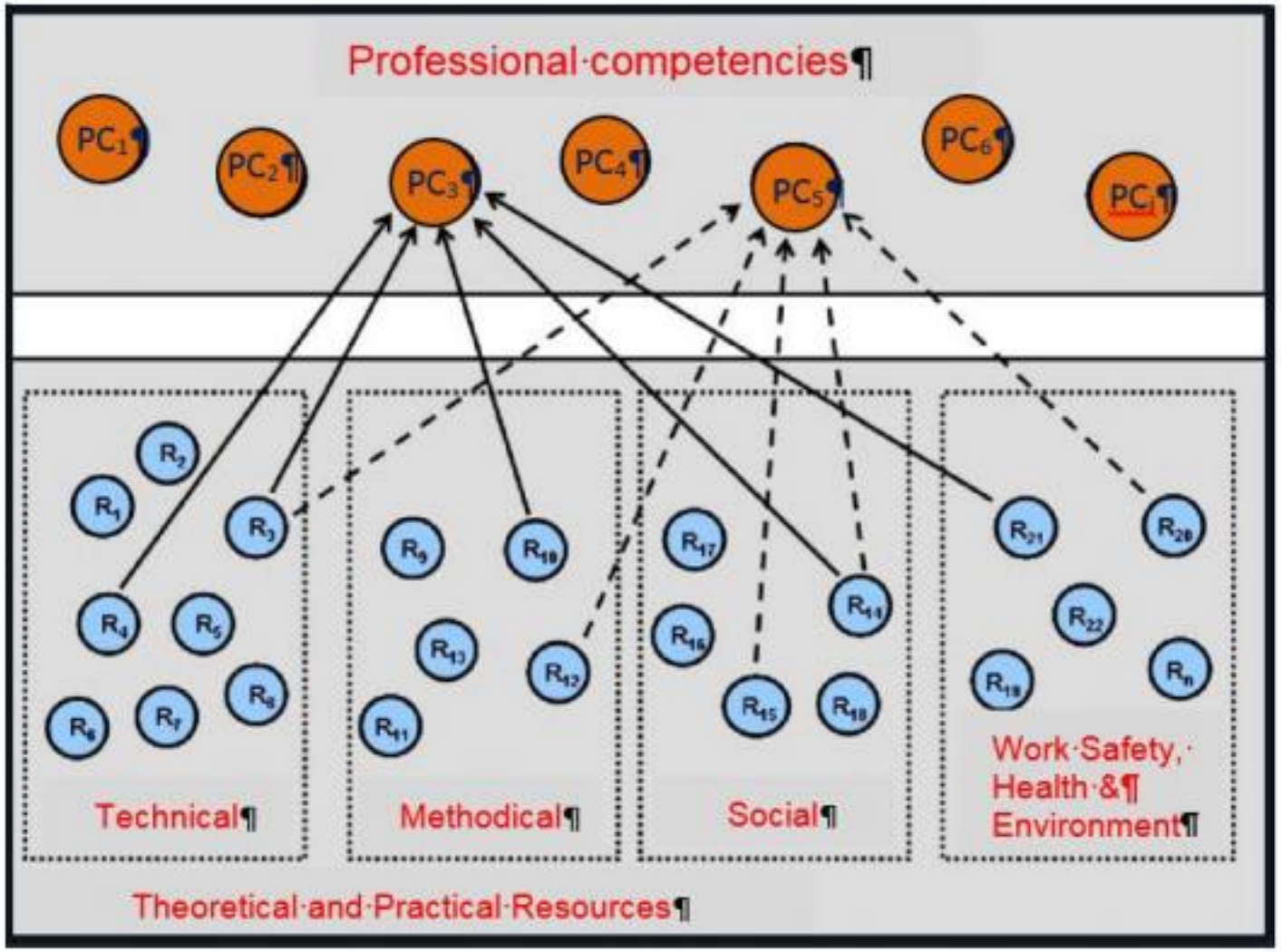

Apparatus Engineer (4y)


Commercial employee (3y)

SWISSMEM

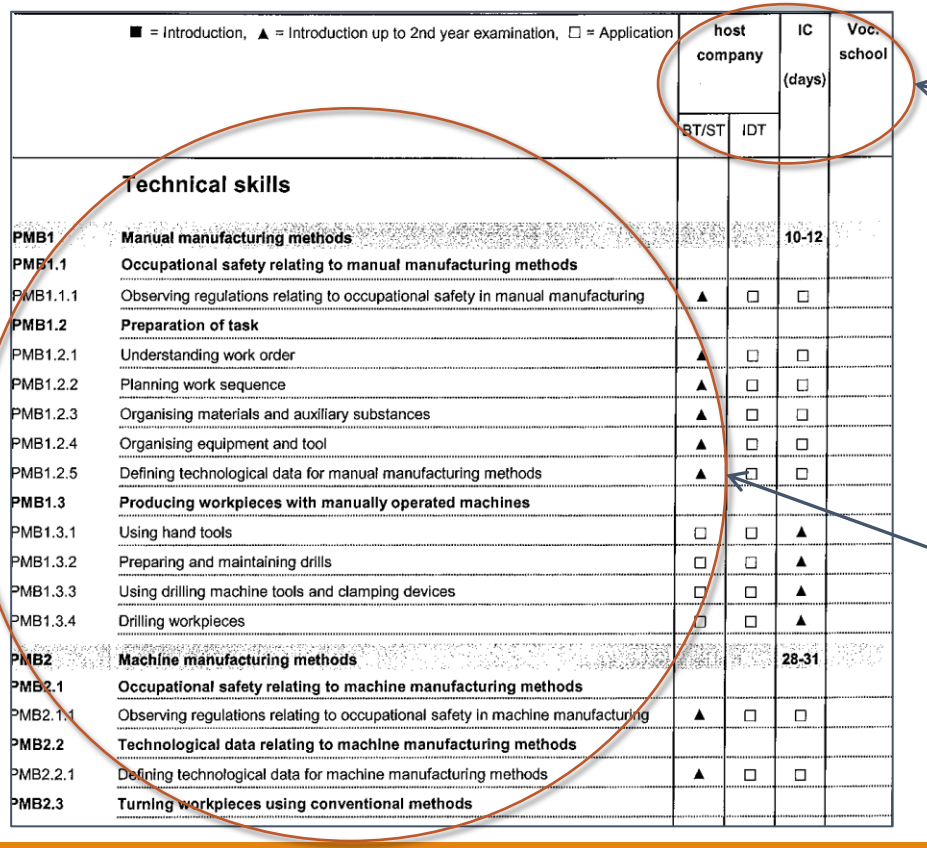
Industry Training Guides

- The training guides developed by industry associations, like SwissMEM, guide curriculum and training across the country for all VET programs in manufacturing and engineering.
- Training Guides list and define competencies needed in an occupation.
- A competency is a combination of skills, abilities and knowledge:
  - Technical: Grinder, Mill, Lathe, CNC Programming
  - Methodical: Project Management, Design Thinking
  - Social: Teamwork, Communication, Loyalty
  - Work, Safety, Health & Environment: Ethics, Awareness



Truly industry-driven education

Curricula for occupation is developed based on a set of competencies developed through regional workforce development infrastructure



■ = Introduction, ▲ = Introduction up to 2nd year examination, □ = Application

		host company		IC (days)	Voc. school
		BT/ST	IDT		
	Technical skills				
PMB1	**Manual manufacturing methods**			10-12	
PMB1.1	**Occupational safety relating to manual manufacturing methods**				
PMB1.1.1	Observing regulations relating to occupational safety in manual manufacturing	▲	□	□	
PMB1.2	**Preparation of task**				
PMB1.2.1	Understanding work order	▲	□	□	
PMB1.2.2	Planning work sequence	▲	□	□	
PMB1.2.3	Organising materials and auxiliary substances	▲	□	□	
PMB1.2.4	Organising equipment and tool	▲	□	□	
PMB1.2.5	Defining technological data for manual manufacturing methods	▲	□	□	
PMB1.3	**Producing workpieces with manually operated machines**				
PMB1.3.1	Using hand tools	□	□	▲	
PMB1.3.2	Preparing and maintaining drills	□	□	▲	
PMB1.3.3	Using drilling machine tools and clamping devices	□	□	▲	
PMB1.3.4	Drilling workpieces	□	□	▲	
PMB2	**Machine manufacturing methods**			28-31	
PMB2.1	**Occupational safety relating to machine manufacturing methods**				
PMB2.1.1	Observing regulations relating to occupational safety in machine manufacturing	▲	□	□	
PMB2.2	**Technological data relating to machine manufacturing methods**				
PMB2.2.1	Defining technological data for machine manufacturing methods	▲	□	□	
PMB2.3	**Turning workpieces using conventional methods**				

One document outlines the entire set of competencies for a particular entry-level occupation; competencies include:

- Technical skills (tool usage, safety…)
- Soft skills (communication, optimism…)
- Method skills (design thinking, project management...)

Each competency is taught in the most appropriate venue (school, training program, workplace); research shows that soft skills are best learned in the workplace

Training Guide Competencies

Competencies are presented in case studies that are then broken out into individual skills lists.

These case studies become the basis for assessment during the apprenticeship.

The competency lists also include where the competency should be learned (on the job, in school, at an intercompany training facility).

b.3 Fitting together and starting up assemblies	
Case study Mike is given the task of fitting together an assembly. The task documents specify the testing and measuring instruments, test records and components. He studies the work order and manufacturing documents, draws up a plan of work and selects the assembly tools and auxiliary assembly devices. He prepares for fitting the assembly together by selecting the assembly tools and auxiliary devices, classifying the components and checking them for completeness. Before Mike begins the process of fitting together, he ensures that he knows how the assembly tools and auxiliary devices work and that he is capable of observing safety regulations. He fits the assembly together according to his plan of work. He uses the measuring and testing instruments to check dimensions and correct operation and starts up the assembly. Mike records the testing and start-up results in the appropriate record.	**Skills list** Understand work order Plan work sequence Organise components and auxiliary substances Observe regulations relating to occupational health and safety and environmental protection Organise tools and auxiliary devices Fit assemblies together and adjust Test and start up assemblies Locate and eliminate faults Test and record quality

b.4 Measuring and testing parts	
Case study Anna is given the task of testing manufactured parts. The work involves measuring individual dimensions and testing functioning. The task documents specify the testing and measuring instruments and the test records. She studies the work order and the documents relating to the parts to be tested and their functions. She draws up a plan of work and determines the individual operations to be carried out and the measuring and testing instruments to be used. She arranges her workplace for measuring and testing purposes by selecting and laying out the specified instruments. She tests the parts in accordance with her plan of work and records the measuring and test results in the test record.	**Skills list** Understand work order Plan work sequence Assess measuring and testing instruments Measure and test components and assemblies Test and record quality Observe regulations relating to occupational health and safety and environmental protection

Single Company Apprenticeship Training

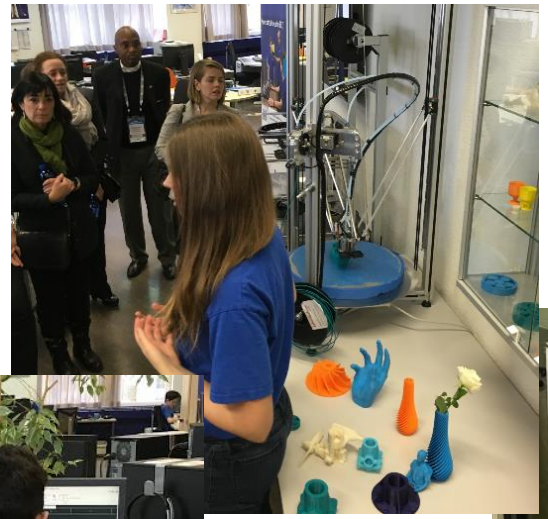
MIKRON

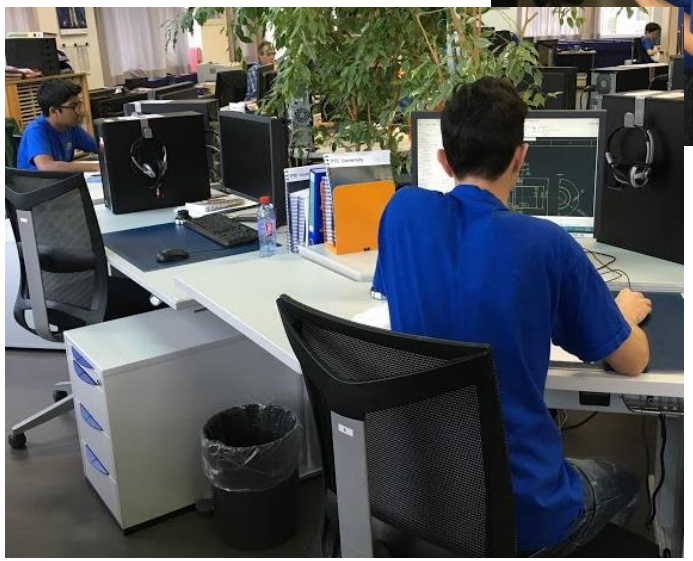
- Manufacturer of high precision automated assembly machines
- North American Headquarters in Englewood, CO (near Centennial Airport)
- World Headquarters in small town of Boudry, Switzerland.
  - No manufacturing specific schools near by- created apprenticeship program internally
- 1/3 of machining production floor is dedicated to apprenticeship training
- Only spend a couple months on manual machines at age 15/16 then move on to all CNC

Multi-Company Training and Brokering

Industrielle Berufslehren Schweiz

- Libs is a multi-company, privately funded manufacturing training center
- Supported by SwissMEM
- 4 locations: Baden, Heerbrugg, Rapperswil and Zurich
- 80+ business partners including ABB, Bombardier, and Honeywell,
- Manages talent supply chain from recruitment through apprenticeship; including personal development of students
- Students spend first 2 years (typically unproductive training) at libs, then are brokered to a member company for the final 2 years (typically productive training)





Inter-company Training Schools

CYP smart education

Center for Young Professionals in Banking

- Created in partnership by 5 major banks including Credit Suisse and UBS and the Swiss Banker Association
- Founded in 2003
- 70% of all new bankers attend CYP
- Provide training to apprentices that are learning to underwrite loans at age 16
- Offers career coaching to students prior to apprenticeship
- Provides assistance to member businesses for internal training

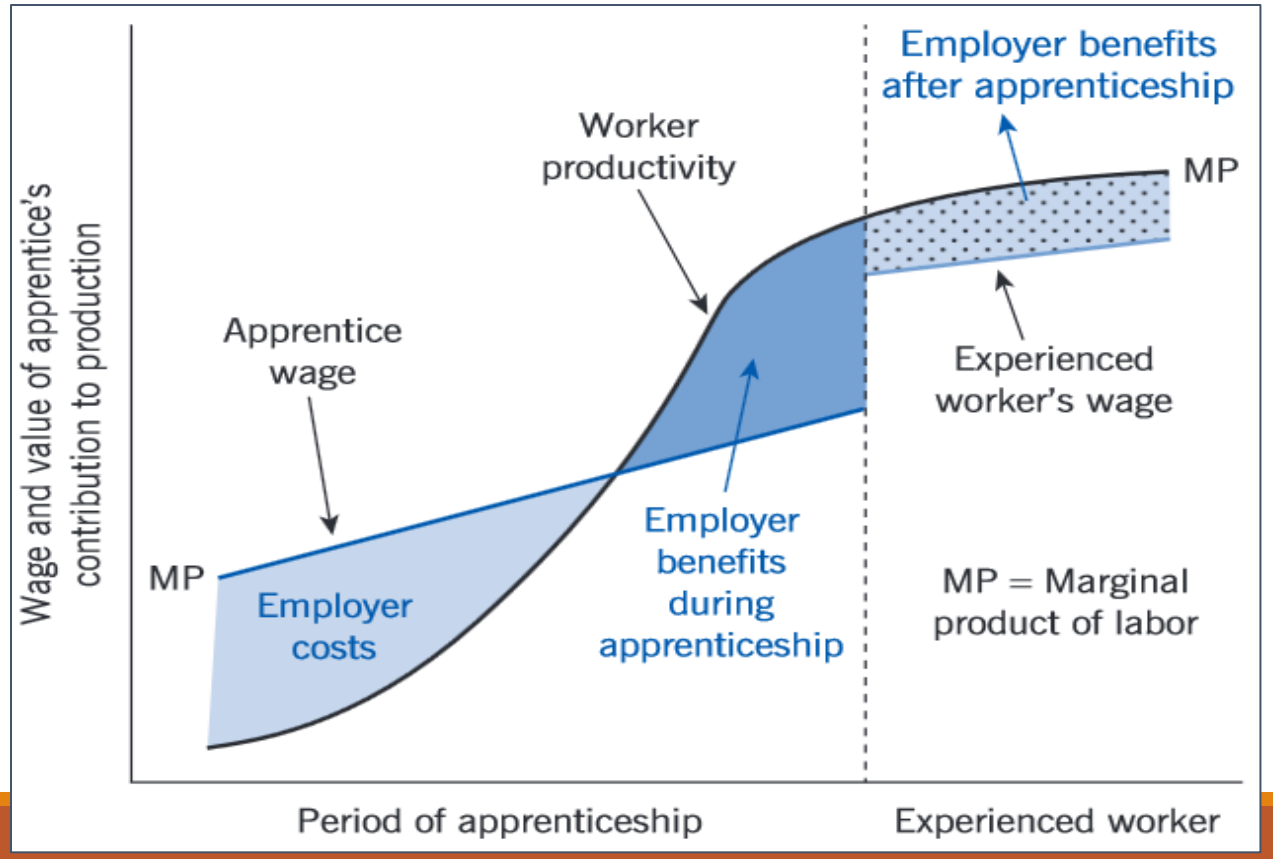
ROI

- Savings on recruiting costs
- Training to industry standards = savings on retraining = higher productivity
- Loyalty to company. Typically 30% stay with training company (or return after college)
- Sustainable learning model through paid internships
- Aligned supply and demand of skilled workforce = number of apprenticeships dependent on market demand
- 3.4% youth unemployment rate
- Costs: depending on industry can be $20,000- $100,000 per apprentice for coaches, curriculum and material/equipment.
- Canton pays for classroom training (secondary and upper-secondary school)

The Business Case

Prof. Stefan Wolter of the University of Bern was able to prove a positive Return on Investment for businesses that host apprenticeships structured appropriately:

- Two variables: time and wage
- The initial years are always an investment in training, not typically productive
- The last half of the apprenticeship should be more productive than the training wage being paid to offset the initial cost
- Most companies experience a net zero training cost, or even increased profitability
- Other benefits:
  - reduced turn-over
  - increased loyalty
  - increased innovation and productivity
  - enhanced team atmosphere



- Wage and time are the variables in this model, when structured appropriately,
- There is an ROI to industry because apprentices perform productive work as they become increasingly skilled

Table 11.3 Gross cost, benefit, and net cost of training in Swiss firms, 2000, €

	Gross Cost	Benefit	Net Cost
Training Firms	58,295	61,276	−4,116
Nontraining Firms	72,427	31,524	28,263

Note. All values are predicted econometrically, so net costs for training firms differ somewhat from the survey-based estimates in Table 11.1.

Source: Wolter et al. (2006); converted from Swiss francs at 1€: 1.5CHF.

How can we bring this model home?

- Identify both private and public funds to spur competency development and workplace training opportunities.
- Integrate higher education and work experiences in high school.
- Pilot programs with various industry sectors and school districts
- Challenges: Diversity,immigration integration, can't fill demand for apprenticeships- dependent on the market.
- Must align public *and* private resources to develop this system– The private sector *must* sustain this.

the BEL Commission

Business Experiential Learning Commission

The Vision and Operations

Business Experiential Learning Commission

aka “The BEL Commission”

Created by Governor Hickenlooper’s Executive Order B 2015-004

Chaired by Intertech Plastic’s CEO, Noel Ginsberg and led by business leaders from across multiple industries.

In Partnership with the Colorado Workforce Development Council

- Colorado Department of Labor & Employment
- Colorado Department of Higher Education
- Colorado Office of Economic Development

Business and state leaders partnering with local communities to expand work-based learning opportunities

BASIC gives CO businesses the tools they need to develop a highly skilled workforce

What BASIC does

1. Enables Colorado's companies to tailor their future workforce through business-led training and skills development
2. Defines and develops the competencies required to fill key roles across the state
3. Facilitates the creation of industry-specific talent pipelines
4. Gives Coloradans the skills they need to contribute to growing prosperity across the state

Why BASIC works

Reduces all-in employee hiring and training cost by 20%+

Delivers 50% ROI to businesses hiring apprentices for the full term of the BASIC program

Delivers 23X lifetime return on taxpayer dollars invested in education and workforce training

Provides program graduates with a median annual wage of ~$50,000

Increases participants' graduation rate from 77% to 93%

BASIC matches talent development to talent need and puts business in the driver's seat

Government:

- Provide legislative support, incentives, and funding; support the standardization of BASIC across Colorado
- Develop and convene sector partnership to provide ground-game support

Industry Associations:

- Develop competency standards, curriculum & assessments.
- Provide CCOLs with training protocol and guidelines

Businesses:

- Gain certification as Centers of Learning to host and hire apprentices
- Fill talent pipelines through engaging career exploration and pre-apprenticeship training
- Support student recruitment/outreach in region
- Participate in the development of competency and curriculum standards, based on talent needs

K- 12 Schools:

- Provide career counseling, guidance, and exploration opportunities
- Provide students with soft-skills needed to enter the workplace
- Facilitate entry into apprenticeship programs
- Assist in the development and evolution of apprentice competencies

Community-Based Organizations:

Provide complementary services and programs and support student outreach

Post-secondary Education:

Partner to help determine appropriate higher education pathway for each student

BASIC will bring together the different pieces of Colorado's educational and workforce training infrastructure

Over the next 10 years, BASIC will move from the pilot phase to a national leader in talent development

To move from Stage 2 to Stage 3, **BASIC must stand-up a full time organization** with strong program and relationship management capabilities

Stage 1 **Design (2015)**

- Identify business partners
- Build pathways from business to students
- Define initial sectors and required competencies
- Build initial organization model and start-up team

Stage 2 **Pilot (2016)**

- 6000+ students engaged in DPS CTE programs
  - CareerConnect
- Other market expansions
- Skillful, the competency-based labor market
- Recruit and on-board industry associations, sector partnerships and business partners

Stage 3 **Initial Implementation (2017-2020)**

- Continue to develop BASIC's organizational structure
- Certify 400 business in 6 sectors as centers of learning
- Establish strong BASIC presence in 5 leading school districts across Colorado
- Launch the apprenticeship marketplace

Stage 4 **Scale Statewide (2020-2023)**

- Build pipeline of talent to fill 20,000+ positions across Colorado
- Continue to refine, test and share competencies at the national level
- Begin measuring and evaluating impact of apprentice-learning

Stage 5 **Sustain (2023-)**

- Continue to facilitate business leadership in work-force training
- Respond to a changing economy and labor markets by updating and adjusting training annually
- Support efforts to build a national apprenticeship model by sharing lessons learned across the U.S.

BASIC is ready to move from the design and pilot phase to broader implementation across the State of Colorado

CAREERRESIDENCY

Pilot Example

DPS CAREER CONNECT

DPS Career Connect Pilot Overview

Three industries, select high-skill positions:

- Advanced Manufacturing (General Technician), Tech (IT Specialist), Banking (TBD)
- High-demand industries; high-skill; high-wage occupations

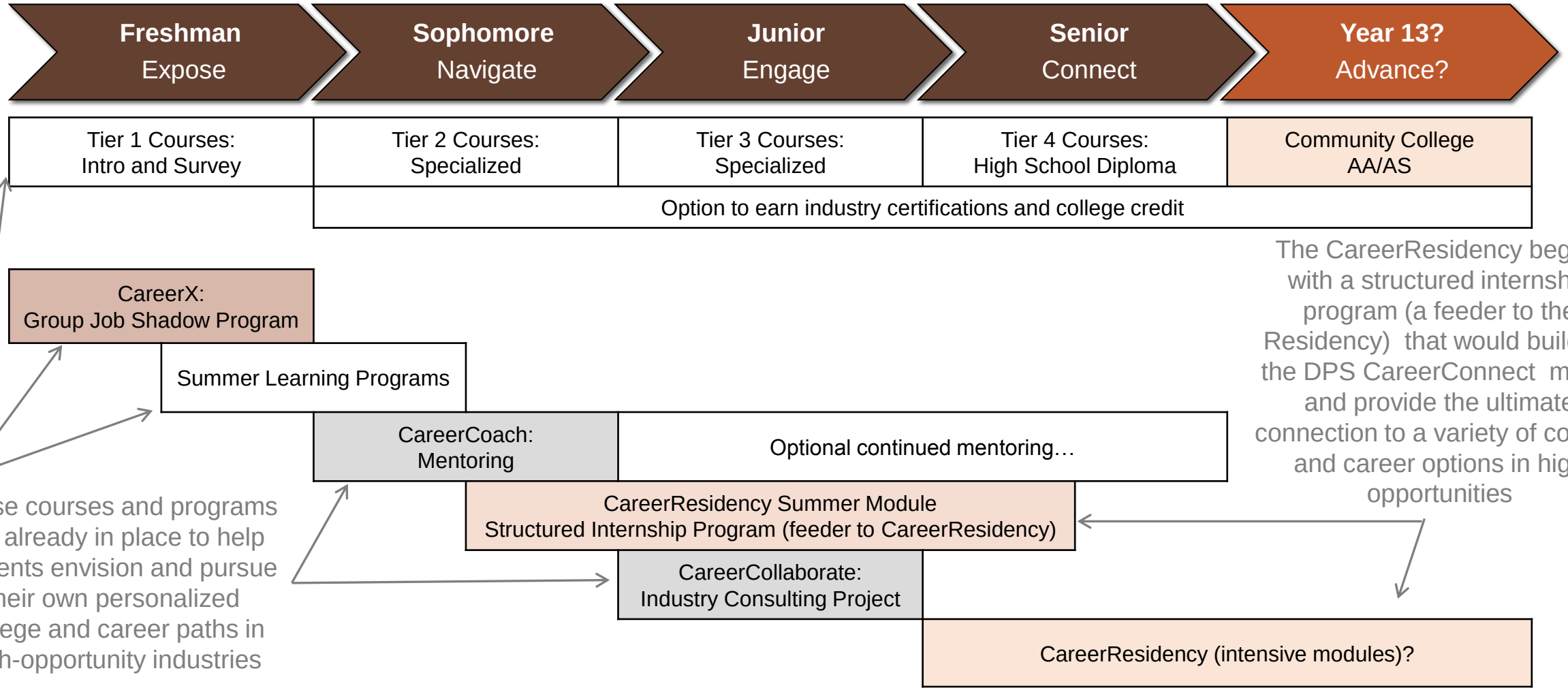
Two phases: Phase 1 is planning (1 year); Phase 2 is pilot implementation (2 Years)

One milestone checkpoint: T+12 months—confirm plan and needs for Phase 2 (years 2 and 3 of pilot)

Targeted program launch:

- CareerResidency Summer Module and feeder program: Summer 2016
- CareerResidency (intensive modules): 2017-2018 school year
- First CareerResidency graduates (with associates degree): May 2019

The CareerResidency Model



Discussion:

How does the CWDC interact with the BEL Commission?

What do pilots look like in other districts/ regions?

How do Sector Partnerships support Colorado's new youth apprenticeship system?

What resources do our businesses need?

Other Questions?